

SPECTRAL PHASE MEASUREMENT USING PHASE-DIVERSE COHERENT  
OPTICAL SPECTRUM ANALYZER

ABSTRACT OF THE DISCLOSURE

5           Embodiments in accordance with the invention provide an optical spectrum  
analyzer. The optical spectrum analyzer includes a receiver for receiving an optical local  
oscillator signal and an unknown optical signal. The receiver outputs three or more phase-  
diverse heterodyne signals. The phase-diverse heterodyne signals are coupled to a phase  
quadrature generator. The phase quadrature generator produces a first and second phase  
10   quadrature signals that are ninety degrees out of phase with respect to each other. The  
first and second phase quadrature signals are coupled to a complex signal generator. The  
complex signal generator produces a complex signal having a positive and negative image.  
A measurement processing unit determines the phase of the unknown optical signal from  
the relative difference of the phase of the positive and negative image of the complex  
15   signal.